The Grill: Michelle Erickson, Citigroup's green IT director, talks about carbon footprints and her role as an environmental ambassador. PAGE 13

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AI Comes Of Age

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After decades of limited application, artificial intelligence is everywhere. And this time it really works. Page 16

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JANUARY 26, 2009
VOL. 43, NO. 4 $5/COPY

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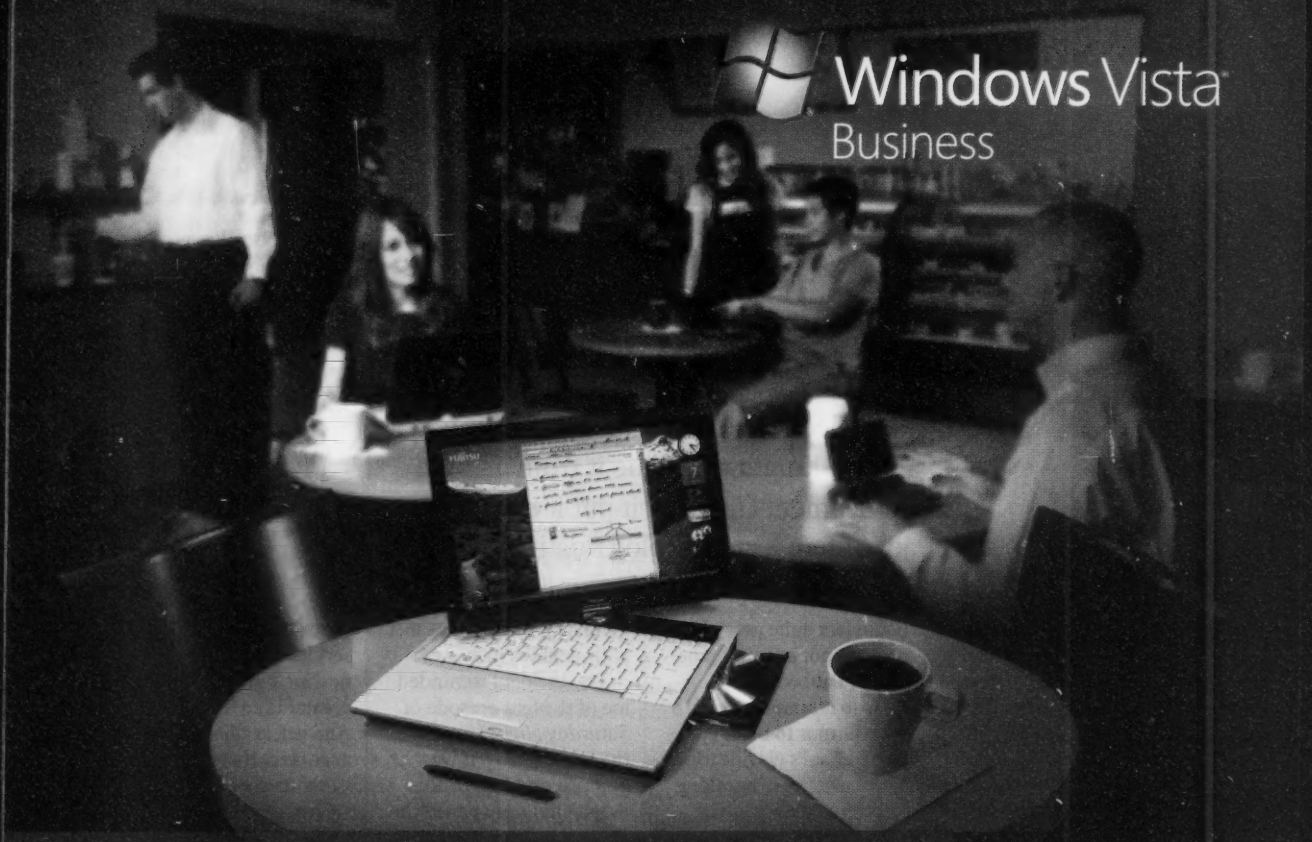
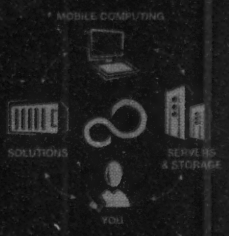
Fujitsu recommends Windows Vista® Business for business computing.
Fujitsu recommends Windows Vista® Home Premium for personal computing.



When your life is caffeinated, you need a notebook that keeps up.



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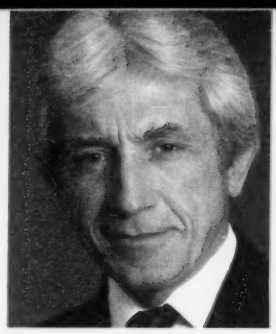
■ EDITOR'S NOTE

Don Tennant

Spirit of Service



WHEN Circuit City announced on Jan. 16 that it had no choice but to liquidate after failing to find a white knight to rescue it from its own mismanagement (not that it put it exactly that way), another 30,000 jobs were lost. In a blog posting that day, I wrote that the culprit was the demise of decent service.

"What killed Circuit City is precisely the same thing that killed CompUSA a year ago: Its only real value-add — knowledgeable sales and support staff with the expertise to explain the technology to customers — was long gone," I wrote. "Specialty stores like Circuit City lost their appeal when they stopped investing in proper hiring practices and training programs. There was no longer any reason to venture out to Circuit City . . . when you could get the same merchandise, probably at lower prices, while you were at Wal-Mart buying underwear and razor blades."

A few days later, Lonny Paul of "The All-New CompUSA" e-mailed me to inform me that CompUSA wasn't killed after all. It was purchased by Systemax last January, and it turns out there are 23 CompUSA stores in four states. "I hope you understand the importance of clarification in the public's knowledge that CompUSA is not 'killed,' but in fact quite open, just perhaps not in your hometown," Paul wrote.

In an attempt to bring a little humor to bear, I presented Paul's clarification in my next posting, along with this retort:

"Well, OK, but come on, Lonny. 'Perhaps' not in my hometown? With 15 outlets in Florida and a sprinkling in Illinois, North Carolina and Texas, the chances of somebody having one in his hometown would be kind of remote, wouldn't they? Can I say 'virtually killed'? 'Killed for all intents and purposes'? 'Killed in effect'?"

A reader who posted a comment in response didn't think that was particularly funny. "Note to self," he wrote. "Clarification of the finer points of fact in Mr. Tennant's work will be met with scathing sarcasm."

■ There was something about last week that made it seem that it's once again OK to smile.

The incident reminded me of the first episode of *Saturday Night Live* after the 9/11 tragedy. It was Sept. 29, and Mayor Rudolph Giuliani opened the show surrounded by New York policemen and firemen. "Can we be funny?" Producer Lorne Michaels asked him. "Why start now?" was Giuliani's deadpan response. Perhaps you recall how the country was uplifted by the feeling that it was OK to smile again.

Now we find ourselves burdened with another national calamity, this time one that's economic in nature. For many, lightheartedness might seem terribly out of place under the circumstances.

Yet there was something about last week that made it seem that it's once again OK to smile. Maybe it was the smiles on the faces of our new president and first lady as they walked down Pennsylvania Avenue on Inauguration Day. Maybe it was the smiles in the eyes of the millions of people who cheered them. Maybe it was the smiles in the hearts of the people who heard these words from President Obama in his inaugural address, when he spoke of those who are defending our country and those who have given their lives for that lofty purpose:

"We honor them not only because they are guardians of our liberty, but because they embody the spirit of service — a willingness to find meaning in something greater than themselves. And yet, at this moment — a moment that will define a generation — it is precisely this spirit that must inhabit us all."

We're remembering how essential it is to our well-being to be able to smile. But we've long forgotten how vital the spirit of service to others is, whether we find ourselves in a computer products retail outlet where customer service is an ineptly staffed kiosk, or in an IT shop where service orientation is an architecture, not an attitude. Whether the jobs are lost to Wal-Mart or to some faceless outsourcer, they will continue to be lost until the spirit of service inhabits us all. ■

Don Tennant *is* Computerworld*'s senior editor-at-large. You can contact him at don_tennant@computerworld.com, and visit his blog at* http://blogs.computerworld.com/tennant.

RESPONSE TO:

Playing Hard to Get

Jan. 12, 2009

This article shouldn't be a surprise to anyone who's followed Apple over the past couple of decades. Their push has always been consumers, prosumers and creative professionals. They have repeatedly said that their interest is not in the big enterprise.

What I found enlightening in this article is that with careful planning and control of the environment, it is indeed possible to integrate Macs. The ones that don't succeed are the ones who don't plan, who don't know the new environment and just expect it to look and work like Windows. It's not — it's a commercial-grade Unix. Expecting otherwise is the recipe for an Epic Fail.

■ **Submitted by:** *Anonymous*

RESPONSES TO:

Unshared Pain

Jan. 12, 2009

Luckily, compensation (executive or otherwise) is a function of market economics, and not the author's opinion about relative worth. The best indicator of worth is exactly what's on the paycheck, and when things are out of balance, e.g., value is less than pay, then correction will come, sooner or later.

■ **Submitted by:** *Mark C.*

I have my doubts that this is the free market at work. The boards and C-level executives seem to be a small insular group that scratch each other's backs.

Look at most boards: They are often staffed by the C-level executives of other companies. So they all have an interest in promoting these huge packages and salaries as if that is the norm in the market, and then their own compensation will follow so-called market trends and be exorbitant as well.

There's a bit of collusion that goes into the mix. It's more a corruption of the free-market system than an expression of the system.

■ **Submitted by:** *Sceptical*

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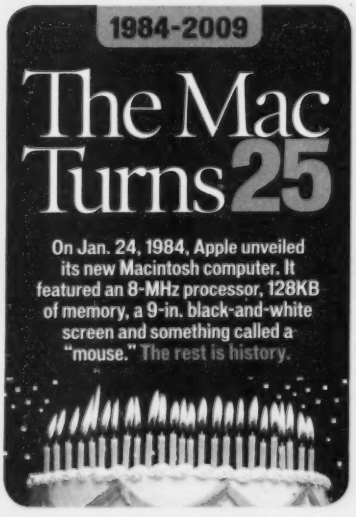
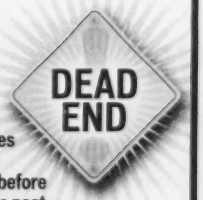

1984-2009
The Mac Turns 25
On Jan. 24, 1984, Apple unveiled its new Macintosh computer. It featured an 8-MHz processor, 128KB of memory, a 9-in. black-and-white screen and something called a "mouse." The rest is history.

End in Sight For Hard Disks?



As solid-state disk technology gains ground on hard disk drives in terms of capacity and price, experts say it may not be long before spinning disks are a thing of the past. Instead, a computer's storage will reside in flash memory on the motherboard.

No Travel Budget? No Problem

REVIEW: Have business trips been cut from your budget? Here are three services that can help you maintain face-to-face connections with your customers and colleagues.

Two Weeks Without Windows

Can a dedicated Windows user survive for two weeks using only Linux? Preston Gralla tried it and lived to tell the tale.

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News Digest

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THE WEEK AHEAD

MONDAY: Virtualization market leader VMware plans to report its fourth-quarter financial results.

TUESDAY: The U.S. Senate Committee on the Judiciary is due to hold a hearing in Washington on privacy issues related to the use of electronic health records.

TUESDAY: Sun Microsystems, Yahoo and VMware's parent company, EMC, are all scheduled to file earnings reports. SAP will disclose its preliminary Q4 numbers on Wednesday.

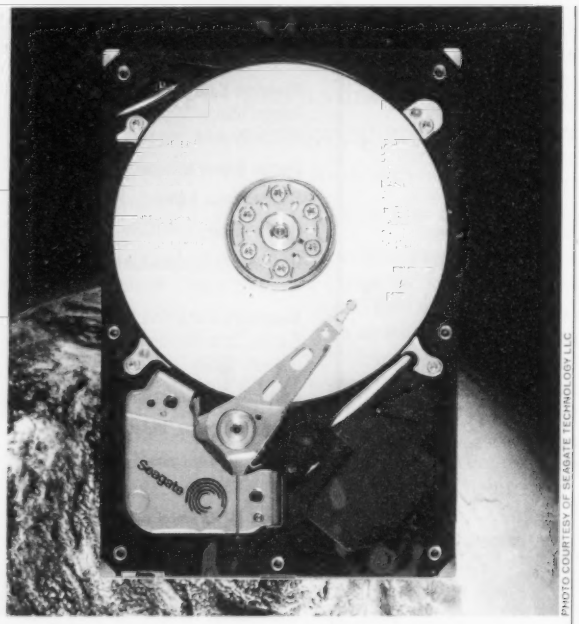

PHOTO COURTESY OF SEAGATE TECHNOLOGY LLC

STORAGE

Seagate Moves to Fix Disk Drive Flaws

LAST WEEK, Seagate Technology LLC tried to appease users who for the past two months have swarmed its online support forum to complain that desktop hard drives have been freezing up during data transfers or failing altogether.

Seagate late last week released the second of two fixes for the firmware bug that caused the problem, and it offered affected users free data recovery services from its i365 business unit.

The company first tried to fix the bug on Jan. 16, but new firmware it released that day had flaws of its own.

Seagate said the firmware bug affected its flagship high-capacity Barracuda 7200.11 hard drive and its Barracuda ES.2 and DiamondMax 22 Serial ATA drives.

According to users on Seagate's online support forum, the faulty drives were freezing for about 30 seconds during I/O transfers of streaming video or when reading or writing files at low speeds.

A Seagate spokesman said the company doesn't know how many of the drives are failing. "The best information we have right now is that it's a pretty small population of our drives," he said.

Duncan Clarke, managing director at Retrodata, a Lymington, England-based data recovery firm, said he and some colleagues in the data recovery industry believe that failure rates on Seagate's Barracuda 7200.11 drive are upwards of 30%.

"We've been aware of this problem since November," said Clarke, noting that the number of Barracuda drives he has been asked to fix has exceeded the number of other models sent in for repairs by a factor of 30.

Jeff Pederson, manager of operations at Kroll Ontrack Inc., a provider of data recovery services in Minneapolis, said 100 Barracuda 7200.11 drives have been sent to his firm for service, including 50 in the past two weeks.

The Barracuda 7200.11 is the eleventh generation of Seagate's flagship drive for desktop PCs. It can store 160GB to 1.5TB of data.

— Lucas Mearian, with Jeremy Kirk of the IDG News Service

CAREERS

Microsoft Plans 5,000 Job Cuts As Its Profits Fall

Microsoft Corp. last week announced that it will eliminate 5,000 jobs because IT spending in the most recent quarter didn't meet projections.

At the same time, the company reported that its profits for its second fiscal quarter, which ended Dec. 31, fell 11%, to $4.17 billion, from the same quarter a year earlier. But its revenue rose 2% to $16.6 billion.

> **"This is not a recession. The economy is resetting to a lower level of consumer and business spending.**
>
> STEVE BALLMER, CEO, MICROSOFT CORP.

About 1,400 workers were laid off immediately, with the remainder to be dismissed over the next 18 months. Posts will be eliminated in IT, R&D, marketing and other departments, Microsoft said.

CEO Steve Ballmer said the layoffs came because Microsoft's "cost base has grown significantly." He noted that new jobs created over the next 18 months will keep the overall head-count reduction to 2,000 to 3,000.

– ERIC LAI, WITH JEREMY KIRK AND PETER SAYER OF THE IDG NEWS SERVICE

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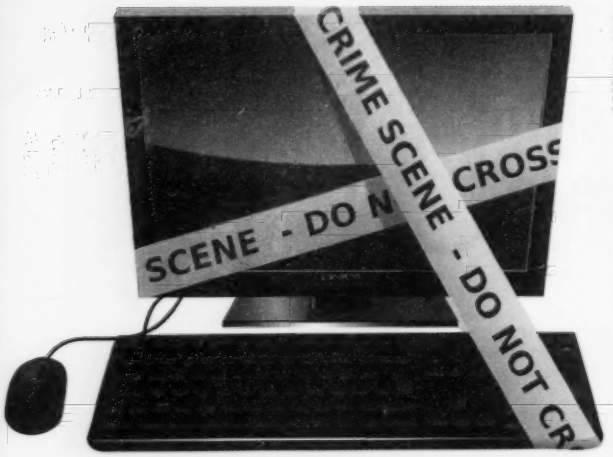

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SECURITY

Data Breach at Heartland May Be Bigger Than TJX's

A DATA BREACH disclosed last week by Heartland Payment Systems Inc. may displace the one revealed by The TJX Companies Inc. in January 2007 as the largest compromise of payment card information to date.

Heartland, a Princeton, N.J.-based payment processor, said intruders broke into its systems sometime last year and planted malware that they used to steal credit and debit card data.

A Heartland spokesman said Thursday that the company still had no idea how many cards had been compromised. It wasn't even sure how long the malware had been on its network, he noted. "All we know is that it was there for a period of time in the second half of 2008," he said.

But given that Heartland processes more than 100 million card transactions per month, it's conceivable that the number of compromised cards could be at least that high, said Gartner Inc. analyst Avivah Litan. In the TJX breach, 45.6 million card numbers were stolen over 18 months.

"Everybody who processes card information is dying to know how exactly this happened," said Henry Helgeson, president and co-CEO of payment processor Merchant Warehouse Inc. "One of our frustrations right now is, if this is a new attack, we need to know about it."

The Heartland breach was the second disclosed by a large payment processor in recent weeks. On Dec. 23, RBS WorldPay Inc. said that the personal data of about 1.5 million card holders had been compromised in a breach of its systems.

The two incidents may point to a new — and potentially more lucrative — strategy on the part of cybercrooks. "Attacking a processor is much more serious than attacking a retailer," Litan said, adding that the payment industry as a whole needs to adopt "more radical" security measures.

— Jaikumar Vijayan

Short Takes

Advanced Micro Devices Inc. announced plans to shed 1,100 jobs and cut salaries to further reduce costs. Salary cuts will range from 20% for CEO Dirk Meyer to 5% for overtime-eligible employees. The company announced 2,100 job cuts last year.

The Kentucky Court of Appeals has overturned a circuit court ruling that authorized the state to seize the Internet domain names of 141 online gambling sites. The state had sought to block access to the sites from devices within Kentucky.

As part of a restructuring of its manufacturing operations, Intel Corp. is cutting 6,000 jobs and closing four facilities – two assembly and test operations overseas, and two wafer production plants in the U.S.

Google Inc. executives blamed one-time investment write-downs for a plunge in fourth-quarter profits to $382 million, compared with the company's year-earlier net income of $1.2 billion.

INTERNET

WhiteHouse.gov Gets Quick Overhaul

WHILE BARACK OBAMA was being sworn in as president last week, his administration was unveiling a redesigned WhiteHouse.gov Web site with new Web 2.0 tools that promise increased interactivity and easier access to government data.

For example, the refurbished site includes a "Briefing Room" where users can read the latest White House blog posts and sign up for e-mail news updates. Macon Phillips, director of new media for the White House, added in a blog post that the site also provides users with pages to comment on nonemergency legislation.

The Obama team already demonstrated technical expertise during the campaign by using Web 2.0 tools like Facebook, YouTube, blogs and discussion boards to converse with voters.

Allen Weiner, an analyst at Gartner Inc., said that because the Obama team has proved to be technically savvy, it will be expected to make continual updates to the Web site.

"Clearly, Obama's advisers understood how to use the Internet," he said. "I think it is almost a mandate for him to continue that. I think people would be disappointed if he didn't."

New York-based blogger Jason Kottke also noted in an e-mail that changes to the site's robots.txt file loosened search restrictions set by the Bush administration. "One of Obama's big talking points during the campaign was a desire for a more transparent government," he said. "The spare robots.txt file is a symbol of that."

– SHARON GAUDIN AND PATRICK THIBODEAU

GOVERNMENT REGULATION

Microsoft Faces New EC Charges; IBM Could Be Next

THE EUROPEAN Commission's antitrust agency confirmed on Jan. 17 that it has again charged Microsoft Corp. with breaking competition laws, asserting that the company's bundling of Internet Explorer with Windows "shields" the browser from rival offerings.

The EC said it believes that 'the tying of Internet Explorer with Windows . . . distorts competition' in the browser market.

Microsoft had said the day before that it had received a formal statement of objections from the EC outlining the commission's preliminary findings in the case, which was sparked by a December 2007 complaint from browser vendor Opera Software ASA.

Microsoft said that it is "committed to conducting our business in full compliance with European law" and that it will study the charges before deciding whether and how to reply. The company has eight weeks to file a response and can request a hearing before the EC.

The EC hasn't released its full statement of objections. But in its confirmation of the charges, it said that bundling IE with Windows gives IE "an artificial distribution advantage which other Web browsers are unable to match." The lack of competition could slow "the pace of product innovation," the EC added.

Meanwhile, T3 Technologies Inc., a small mainframe maker in Tampa, Fla., said last week that it has filed an antitrust complaint against IBM with the EC. The company accused IBM of refusing to sell its z/OS operating system to T3 customers.

EC spokesman Jonathan Todd said the commission was already looking at competition in the mainframe market. "It's not a formal investigation," Todd said. But it could become one if the EC believes that there have been abuses.

IBM rejected T3's claims and accused the upstart vendor of trying to violate its intellectual property rights.

— Gregg Keizer, with Peter Sayer of the IDG News Service

BETWEEN THE LINES

By John Klossner

BENCHMARKS LAST WEEK

The White House said President Barack Obama will keep his BlackBerry and use it in a "limited and security-enhanced" way to communicate with senior staffers and some friends.

BlackBerry developer Research In Motion Ltd. ended a hostile bid for security vendor Certicom Corp. after a judge in Ontario issued an injunction blocking it.

25 YEARS AGO: Apple Computer Inc. (as Apple was then known) introduced the first Macintosh, with a window-based graphical user interface, a mouse and 128KB of RAM.

Global Dispatches

State Farm Terminates Pact With Satyam

HYDERABAD, India – Satyam Computer Services Ltd. last week confirmed that State Farm Insurance Co. in Bloomington, Ill., has terminated its outsourcing contract with the company.

Analysts had expected that the outsourcer, based here, would lose customers after founder B. Ramalinga Raju's disclosure earlier this month that the company had inflated profits for several years.

Satyam received some good news a day after the State Farm announcement, when General Electric Co. said it plans to continue outsourcing work to the vendor for the time being. "We will continue to work Satyam at this point," said a GE India spokeswoman.

John Ribeiro,
IDG News Service

Ericsson Plans to Cut 5,000 Jobs

STOCKHOLM – LM Ericsson Telephone Co. last week announced that it is laying off 5,000 workers in a continuing effort to reduce costs. The job cuts were disclosed after the firm reported that its fourth-quarter profits declined to 3.9 billion Swedish kronor ($469 million U.S.) from 5.6 billion kronor ($674 million U.S.) in the same period last year.

Ericsson projected that the layoffs will cut costs by 10 billion kronor ($1.2 billion U.S.) during the second half of 2009.

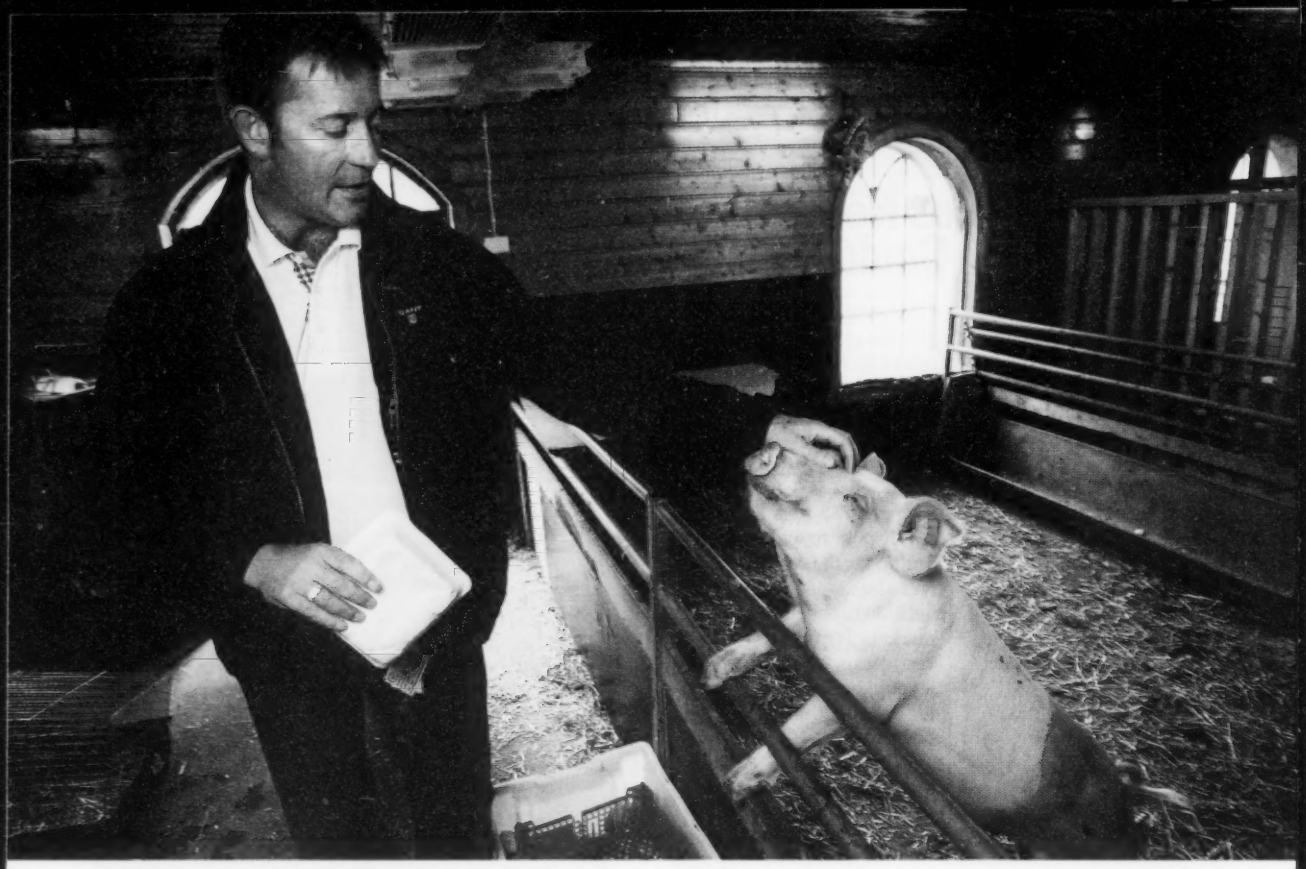
CEO Carl-Henric Svanberg said that although the company's core infrastructure business performed well during the fourth quarter, it faces problems because of consumer cutbacks in spending on telecommunications services.

Mikael Ricknäs,
IDG News Service

BRIEFLY NOTED

IBM has agreed to buy the e-mail service of Hong Kong-based application service provider Outblaze Ltd. IBM said the it plans to use the Outblaze service to beef up its Bluehouse social networking and collaboration platform now being beta-tested. Terms of the deal were not disclosed.

Chris Kanaracus,
IDG News Service



Matiq executive Are Bergquist checks out an RFID tag attached to a pig's ear as part of a test track-and-trace system.

PHOTOS COURTESY OF IBM

Food Poisoning Outbreaks Could Prove a Boon to RFID

Analysts say new mandates will require stronger track-and-trace systems.

By Sharon Gaudin

RECENT NATIONAL outbreaks of E.coli and salmonella poisoning are likely to prompt government mandates requiring that food products be tracked throughout their life cycles — and that could prove to be a boon for radio frequency identification technologies.

The new mandates would come just as other first-generation track-and-trace tools start to spread through the pharmaceutical industry, which was the first to face such government mandates, analysts said.

So far, bar-code systems and pen-and-paper processes are the most popular drug-tracking tools, but observers expect RFID to emerge as the long-term technology of choice in both the pharmaceutical and food industries.

Roy Wildeman, an analyst at Forrester Research Inc., suggested that the advantages of RFID — such as ease of use, the ability to track individual products packed in crates and the ability to scan from significant distances — have so far been overshadowed by the technology's high price tag.

According to a Forrester study, a multibillion-dollar manufacturer can expect to spend $2 billion to $3 billion in start-up costs to implement RFID.

And once the technology is ready for use, companies face significant annual costs, Wildeman added, noting that the average price of 19 cents per RFID tag could mean that it would cost tens of millions of dollars per year to tag millions of items.

Nonetheless, "I think you'll see a cascading wave of [RFID] adoption in the [pharmaceutical and food and beverage] sectors, especially with growing

mandates," Wildeman said. "It will be about public sentiment about food-related illnesses. I think that will bring pressure for the government to take action."

IMPETUS FOR CHANGE

Paul Chang, worldwide lead for business strategy for emerging technology at IBM, said the recent food-poisoning incidents, along with improvements in RFID technology, make 2009 "the year for traceability. It's the perfect storm for RFID — feasibility of the technology, industry adoption and the increased need for tracking the movement of goods."

Those incidents include a salmonella outbreak between April and early August of last year that infected nearly 1,500 people in 43 states and the District of Columbia, according to the Centers for Disease Control and Prevention. The food-borne outbreak caused 286 people to be hospitalized, and it's listed as the possible cause of two deaths, the CDC said.

And a 2006 E.coli outbreak that was eventually linked to contaminated spinach caused 205 confirmed illnesses and three deaths, according to the U.S. Food and Drug Administration.

In statements, the FDA said its investigators were unable to determine the origin of the contamination, despite the use of product codes and the gathering of bacterial DNA from the bags the spinach was packed in.

Just last week, the FDA issued a warning that various peanut butter products contain a strain of salmonella that has sickened 485 people in 43 states and Canada.

The outbreaks come as U.S. Department of Agriculture personnel are studying an RFID tracking system being tested by Matiq AS, the IT branch of Oslo-based Nortura BA, the largest meat-processing company in Norway. Are Bergquist, managing director of Matiq, said that U.S. regulators turned to the firm to find out more about Matiq's response to Norway's government-mandated food e-tracking program. USDA officials did not respond to requests for comment on the project.

Bergquist said the test RFID system, created jointly with IBM, was installed in one of Matiq's 41 Norwegian processing plants. The two-year pilot program is now wrapping up, he added.

The company plans to use the system to track meat from its origin in the fields through the slaughterhouse, the butchery, and the packaging and shipping phases, until it finally arrives on supermarket shelves. The company hopes that the system can also keep track of different ingredients mixed into a single product, such as the different types of meat used in a mincemeat pie, Bergquist said.

"Tracking all the way back through the production process is a huge challenge because it's not an ordinary assembly line," he explained.

"The U.S. has been interested in the total solution," Bergquist noted. "Consumers would like to be pretty sure about the origin and quality and safety of their food before they buy it."

The demand among U.S. consumers for traceability should grow significantly as a result of the recent food-poisoning cases, he added.

Matiq expects the RFID tracking system to be up and running in all of its plants some time next year, he said.

Bergquist said the company is creating the complex tracking system even though Norway's track-and-trace law is fairly limited — requiring only that companies keep track of where they bought a source product.

Nonetheless, Bergquist said he's on a mission to convince the food industry of the benefits of using RFID for product tracking.

RFID "is not just good for food safety; it's good for [improving] inefficient handling methods, and processes and hand-overs from different levels in the chain. We have to increase the understanding of what benefits traceability and RFID can do for an organization," he said.

"We are hoping that with the new administration, there will be a new, overriding federal regulation.

JIM STROUD, PRESIDENT AND CEO, GOLDEN STATE MEDICAL SUPPLIES INC.

WAITING FOR MANDATES

Michael Liard, an analyst at ABI Research in Oyster Bay, N.Y., agreed that RFID technology is the best fit for product-tracking systems. However, he added that widespread adoption won't occur unless the technology is required by state and federal legislation.

"People will jump to bar code [first] because it's a known entity," said Liard.

He suggested that over the long term, companies will be more likely to turn to RFID as they learn of its other potential uses.

"A bar code label is a bar code label," Liard said. "RFID tags have more punch behind them. That tag can have additional capabilities, like temperature logging and pressure sensing. If you're talking about food safety, then temperature becomes very important. That's where the value proposition starts to increase."

While the pharmaceutical industry has a head start in implementing track-and-trace systems, it lacks focus because states have passed inconsistent laws that must all be followed, noted Jim Stroud, president and CEO of drug wholesaler Golden State Medical Supplies Inc. in Valencia, Calif.

California has gained the most attention with its electronic drug-pedigree mandate, which calls for drugs to be identified and tracked through manufacturing, shipping, storage and sales.

California lawmakers are continuing to wrangle over the wording and start dates for the mandate. Other states are working on similar laws governing drug companies.

A federal mandate could prod the drug industry to create a standard tracking technology, Stroud said.

"We are hoping that with the new administration, there will be a new, overriding federal regulation. We want one federal rule as to how we are to provide [drug] pedigrees" — whether it's RFID tags or something else, he added. "We need one rule, one law."

Earlier this month, the FDA started the process of creating "a uniform track-and-trace system for prescription drugs to further enhance their safety and security." The agency is soliciting comments from drug makers on the recommendation. ■

GETTY IMAGES

Cell phone use on the National Mall in Washington contributed to congestion of the Internet and mobile networks during the inauguration.

Inauguration Buckles, but Doesn't Break, The Internet

Social networking and video traffic slowed Web sites when President Obama was sworn in. But the Net survived. By Matt Hamblen and Juan Carlos Perez

PRESIDENT BARACK Obama's inauguration generated massive Web traffic last Tuesday, fueled by unprecedented amounts of live video streaming and a flood of postings on social networking sites such as Facebook and Twitter.

The Internet didn't collapse under the strain, but many media and government Web sites experienced performance slowdowns, according to Internet monitoring firms Keynote Systems Inc. and Gomez Inc.

Keynote also reported that a group of 40 large corporate Web sites it tracks saw a collective slowdown. That was likely caused by the demand placed on the Internet's bandwidth by the millions of live video streams being delivered to online viewers, said Shawn White, Keynote's director of external operations.

The performance problems weren't unexpected, given the groundbreaking nature of the online activity related to the inauguration. For example, it was the first transfer of presidential power since online video became common, and live streaming records were widely broken.

"Traffic is completely through the roof," a CNN spokeswoman said late last Tuesday. The news network's Web site generated about 160 million page views and 25 million video streams between 6 a.m. and 6 p.m. Eastern time that day. The streaming total easily surpassed CNN's previous one-day record of 5.3 million streams, set on Election Day in November.

The social networking phenomenon was another new factor. CNN contributed there as well, via a deal that let Facebook users post messages to one another while watching the inauguration on CNN.com Live.

Internet users also flocked to sites such as Twitter and Tumblr to post their thoughts about the proceedings. At its peak traffic level, Twitter was processing five times more "tweets" per second than usual, according to Biz Stone, co-founder of the microblogging site.

"It's difficult to prepare for something that's unprecedented," Keynote's White said. "On a positive note, I had heard predictions that the Internet would crumble, which didn't happen."

Further complicating matters was the fact that so much of the traffic was compressed into the one hour or so from the start of the formal ceremony to the end of Obama's inaugural address. That posed a much bigger challenge than, say, the millions of video streams delivered by NBC from the Summer Olympics in China over a two-week period last year.

"It's hard to build in enough network capacity for a one-time event like the inaugural," said Matt Poepsel, vice president of performance strategies at Gomez.

It would be financially "imprudent," Poepsel added, for companies to always maintain processing levels with enough capacity to handle such events. As a result, Web site operators often have to make educated judgments about how many servers and network links to add in such situations, he said.

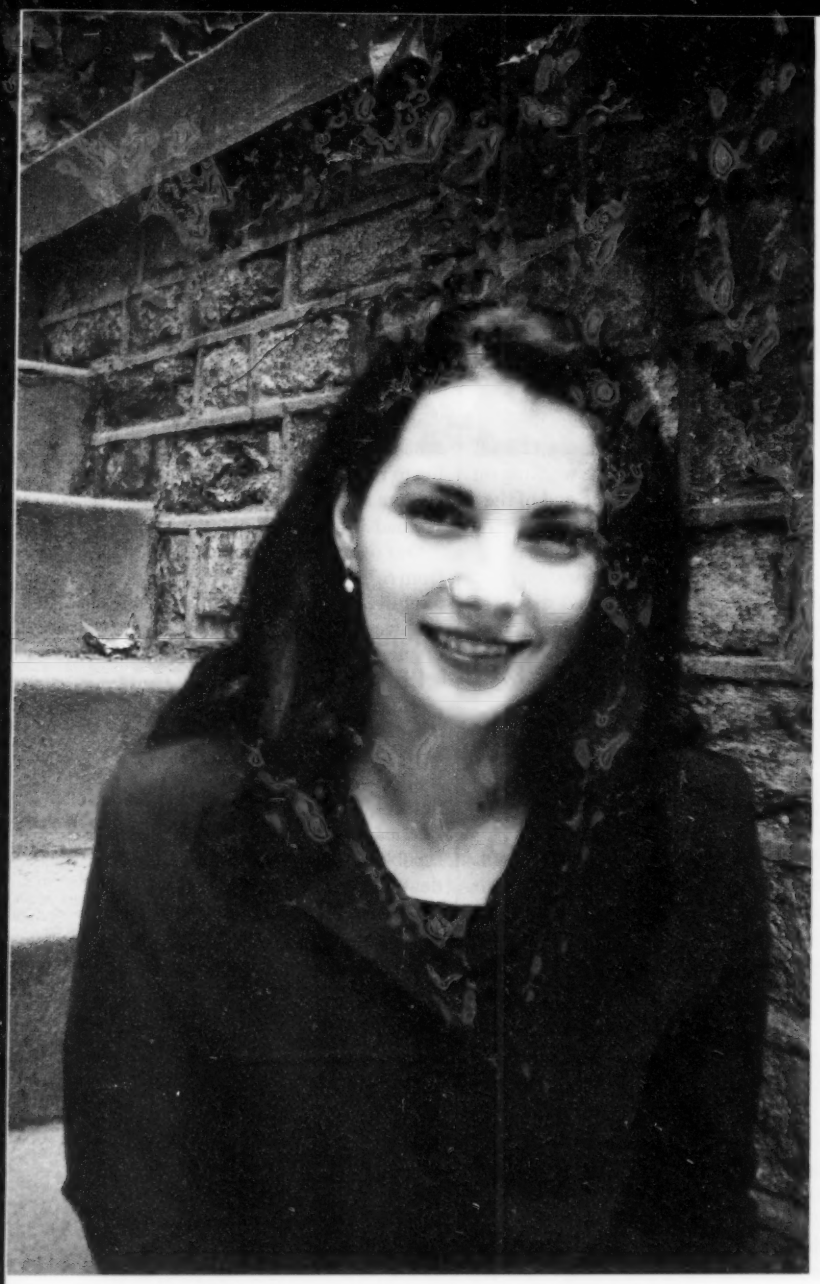
Before the inauguration, CNN.com officials said they were "cautiously optimistic" that they had added enough video capacity to the Web site to handle the expected onslaught of live streaming.

Even so, some users who tried to connect to the CNN video page just before Obama took the oath of office received the following message: "You made it, [but] so did everyone else. You have a place in line." At the same time, a Boston-area *Computerworld* reporter was unable to access the video streams at either CNN.com or CBS.com from a home office.

Cell phone networks in the Washington area were also sometimes overloaded during the ceremony, as the millions of people on and around the National Mall tried to make calls, send text messages and upload videos.

But Jeff Kagan, an independent analyst in Atlanta, described the performance of the mobile networks as "a success, with a hiccup here and there." Some problems were inevitable, Kagan added. "In situations like this," he said, "there simply cannot be enough capacity." ■

Perez *writes for the IDG News Service.* Computerworld's **Sharon Gaudin** *contributed to this story.*



■ THE GRILL

Michelle Erickson

Citigroup's **green IT director** talks about **carbon footprints, a $50 billion commitment** to addressing global climate change and her **role as an environmental ambassador.**

Dossier

Name: Michelle Erickson

Title: Initiative director for the global sustainable IT program

Organization: Citigroup Inc.

Location: New York

Most interesting thing people don't know about her: "I put myself through college playing with a professional orchestra specialized in traditional jazz from the 1890s to the 1930s."

Favorite technology: "The Internet – the way it has revolutionized information flow and access."

In high school, she was: "A classically trained cellist, invited to play with a national orchestra at Carnegie Hall."

Favorite vice: TiVo

Pet peeve: Poor design

Social passion: "Trick question?"

How did Citigroup's green IT initiative begin? I began working on this in April or May [of 2007. Former Citigroup CIO] Marv Adams had a strong commitment [and] asked me to look into this. I ended up speaking to people from around the bank and got the program approved by the leadership council in September 2007. The bank has committed $50 billion toward sustainable efforts over the next 10 years. We also have a plan to reduce our own greenhouse gas [emissions] by 10% by the year 2011. And we're operating from a 2005 base.

One of our strengths is our global approach, to see the big picture and see the points of interconnectedness to make sure everyone is talking.

Is it difficult to get people throughout Citigroup to communicate with one another on its green IT initiatives? A lot of what we think of as green IT initiatives were already in place, either as a strategic initiative or as an energy-reducing initiative. Those include server virtualization and storage virtualization efforts.

Our program overall has a frame-

"I'm doing good, and I'm doing it in a company that has the reach and the influence to get something done.

of how IT can reduce its own carbon footprint. We have five areas of focus. The first four are power management, travel substitution, sustainable supply chain and paper substitutions. The fifth is employee education and engagement. Ours is not an ad hoc program. It's a holistic approach — how the bank's operations are affecting the environment.

We began tracking our virtualization efforts in January 2007. Ten percent of Citi's North American [IT] environment is virtualized. Teams have captured a 73% reduction in energy consumption, which translates to 56 metric tons of CO_2 per week or roughly 300 tons per year that we're not emitting. Citi has realized approximately $1 million in annual savings in the North American environment alone through virtualization.

Do you have a staff? There are many initiatives in place that weren't [originally] labeled as green. Those [staffers] are the individuals who are working on our green initiatives. At the end of the day, it's every employee.

We have a leadership committee representing all of the businesses, including risk management and shared services. I chair that committee, and there are 10 of us. That committee reports into senior leadership. We're making sure our senior leadership is engaged and aware of what we're working on, and that does make a difference. We're reaching down into every business.

What are some of the key initiatives you've been involved with recently? We've got a lot going on. On the power management side, where virtualization falls, we have a legacy decommissioning initiative going on in our data centers. They're working very closely with vendors to achieve new efficiencies and reduce our energy consumption. All products certified for our data centers have an 85% efficiency rating. Thin clients offer significant savings. These devices consume anywhere from 6 to 50 watts [each], versus 100 to 150 watts for a typical desktop computer. They also emit less heat, and this results in a reduction in air conditioning costs. We have a goal of having 50% of our global desktop environment populated by thin-client machines by 2010.

For those standard PCs still out in our system, we're working on power management. That will result in significant savings as well.

PC power management is a partnership between our IT and facilities management groups. IT will pay for it, but the facilities group that pays the electric bill will realize the benefits. We really want to have an accurate understanding of what the savings will be — both CO_2 and cost savings.

What are the biggest challenges you face in your role? Every [business unit] has its own vocabulary. Words can be interpreted differently by each organization. I work as a translator helping everyone to understand what each organization is trying to achieve and how they're trying to achieve it and helping them to take the steps to do so.

What are some examples of Citigroup's accomplishments thus far? We're working to reduce the number of global data centers from 52 in 2006 to 24 in 2010. We had 37 at the end of 2007.

Our overall energy consumption fell from 6.735 [megawatt-hours] per occupant in 2006 to 6.551 in 2007. That was achieved, partly, through the issuance of energy best practices throughout the company.

We just launched a mobile-device drive. We're taking it national, with 52 locations across North America. It allows employees to donate mobile devices, including Citigroup BlackBerries, for recycling. We have a scrubbing event where we scrub all the data off the BlackBerries and other Citi devices. A third-party vendor scrubs all the devices, including personal devices.

The proceeds from the mobile devices donated are used to support victims of domestic violence. It's the perfect example of how, when you're responsible for your assets and they're disposed of properly, it's good for the environment and for the communities we work in.

It's a really exciting initiative, and one that people wouldn't necessarily associate with green IT. We did it just in the New York area last year, where we donated 3,500 BlackBerries and mobile phones.

What's the best part of your job? It's that I am doing something that matters, that I believe in. I'm doing good, and I'm doing it in a company that has the reach and the influence to get something done. You can actually see real results, and for me, that's the best thing.

— Interview by **Thomas Hoffman,** *a freelance writer in Warwick, N.Y. (tom.hoffman24@gmail.com)*

■ OPINION

Steven J. Vaughan-Nichols

You Can't Hide From Location-Based Apps

"WHERE THE HECK AM I?" I've asked that question many times as I've gotten lost on America's interstates. It's not as common a question now as it used to be, thanks to GPS devices such as Garmin's Nüvi 200W, Magellan's Maestro 4350 and TomTom's GO 930. Such dedicated GPS devices will probably go extinct before too long, but even after they're gone, you're unlikely to hear anyone ask "Where the heck am I?" again. That's because everything from your mobile phone to your laptop will incorporate GPS technology or tools that duplicate GPS functionality.

Meanwhile, we're going to see a new breed of applications that incorporate GPS data: location-based software, or LBS.

What will these applications do? One example is Xora's GPS TimeTrack, offered by AT&T as software as a service. Igor Glubochansky, director of industry solutions at AT&T, explains that users of these vehicle-installed devices can track field personnel and their activities from a password-protected Web site that provides up-to-the-minute information on location, speed and stop times.

On the consumer side, there are offerings like Loopt's "buddy finder" application, which allows friends to see one another's locations on an online map, thanks to an LBS infrastructure that works with Qualcomm's QPoint location-based server software. I can already foresee games of Twitter tag and Twitter hide-and-seek.

LBS is also being incorporated into Web browsers. Mozilla will be integrating Skyhook's Loki location-based services into its Firefox browser. With an LBS-enabled browser, when you do a search for, say, restaurants — bam!

■ The one thing I know for sure is that location-based software is coming.

— you'll see a map of all the nearby places to eat.

This works even if the phone or PC you're using doesn't have a GPS chip. The trick, explains Nick Brachet, Skyhook's CTO, is the company's XPS (hybrid positioning system), which uses Wi-Fi access points, GPS satellites and cellular towers to determine location.

Skyhook, whose technology gives Apple's iPhone and iPod Touch their sense of location, is far from the only company getting into LBS. Google, for example, has been getting into the act as well.

Mike Chu, a software engineer on the Google Mobile team, says Google is taking a similar approach to Skyhook's for its Google Mobile applications, relying on a database of cell tower locations and Wi-Fi access points.

But if this technology is so advanced and its applications are so cool, why haven't you heard more about it? There are a couple of reasons for that.

First, there's the question of how to make money from it. Charge for the application? Charge for each time the service is used? Slap a service charge onto phone bills? Sell localized ads that appear when a service is used? No one's quite sure how to turn this neat technology into a viable business plan.

The other, more important problem is privacy. You see, the location services work both ways. If you can find out where the nearest bar is by typing "local bar" into your search engine, the technology can also be used to find you. I'm not sure I want an electronic tattletale in my pocket or laptop bag letting an advertiser — or a clever hacker — know where I am all the time.

The one thing I do know for sure is that no matter what form LBS takes, it's coming. Sooner rather than later, we'll all be using it. I hope it works more for our benefit than our detriment. ■

Steven J. Vaughan-Nichols *has been writing about technology and the business of technology since CP/M-80 was cutting-edge and 300bit/sec. was a fast Internet connection — and we liked it! He can be reached at sjvn@vna1.com.*

AI Comes Of Age

After decades of limited application, artificial intelligence is everywhere. And it really works this time.

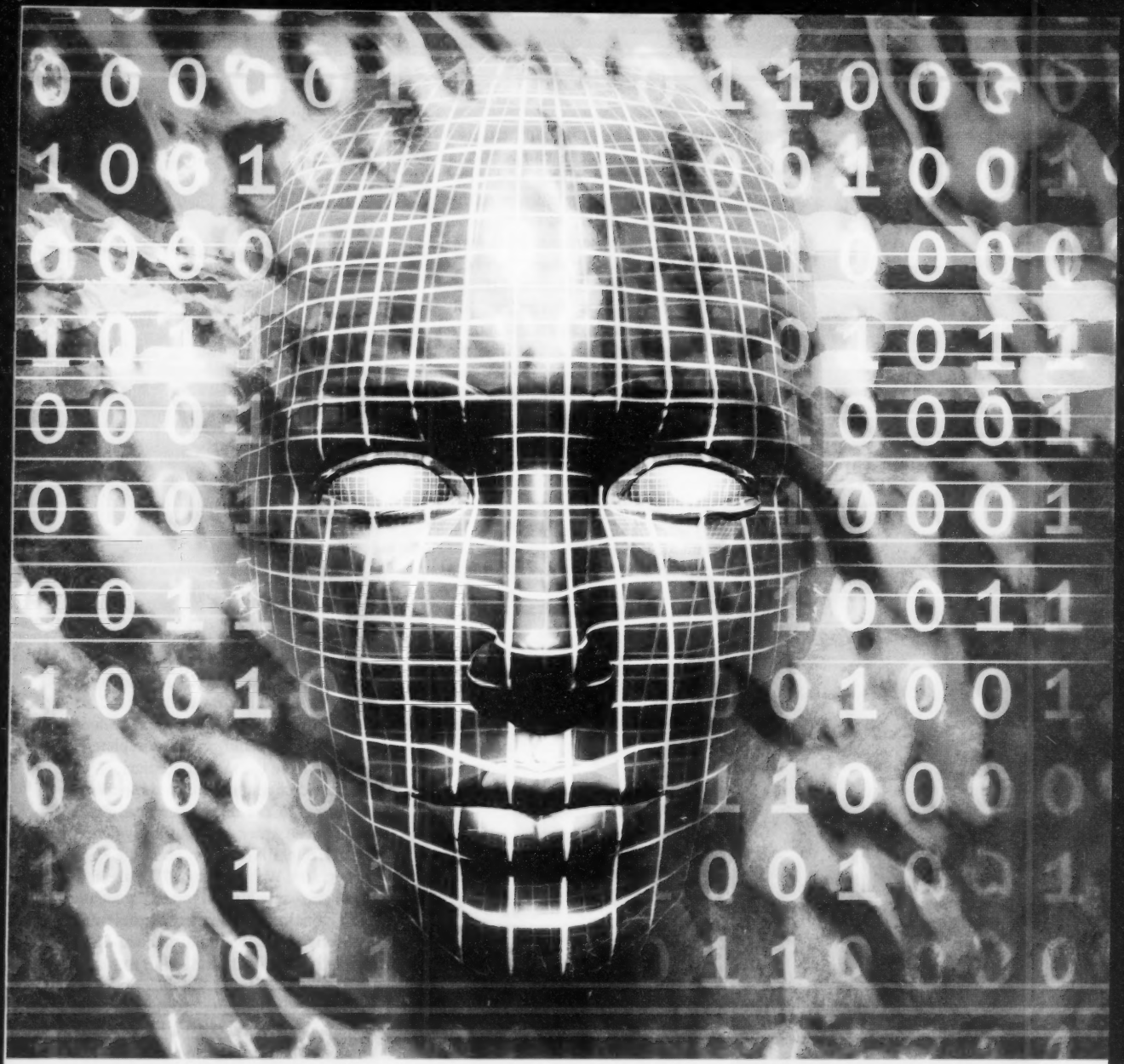
By Gary Anthes

"STAIR, PLEASE FETCH the stapler from the lab," says the man seated at a conference room table. The Stanford Artificial Intelligence Robot, standing nearby, replies in a nasal monotone, "I will get the stapler for you."

Stair pivots and wheels into the adjacent lab, avoiding a number of obstacles on the way. Its stereoscopic camera eyes swivel back and forth, taking in the contents of the room. It seems to think for a moment, then approaches a table for a closer look at an oblong metallic object. Its articulated arm reaches out, swivels here and there, and then gently picks up the stapler with long, rubber-clad fingers. It heads back to the conference room.

"Here is your stapler," says Stair, handing it to the man. "Have a nice day."

These are indeed nice days for artificial intelligence researchers. While Stair's performance might not seem much better than that of a dog fetching the newspaper, it's a technological tour de force unimaginable just a few years



AI: What's Different Now?

- **Ubiquitous computing and more-powerful computers**
- **Huge amounts of data from the Internet and physical sensors**
- **Algorithms that learn and improve over time**
- **Software that's able to deal with uncertainty, incompleteness and surprises**
- **Software agents that can weigh costs and benefits**
- **Integration of separate fields such as speech, vision, robotics, sensors and machine learning**

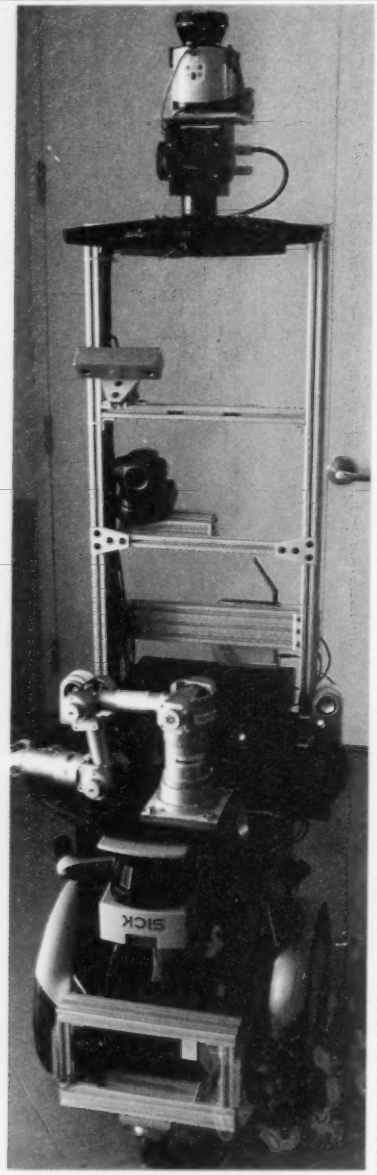
ago. Indeed, Stair represents a new wave of AI, one that integrates learning, vision, navigation, manipulation, planning, reasoning, speech and natural-language processing.

It also marks a transition of AI from narrow, carefully defined domains to real-world situations in which systems learn to deal with complex data and adapt to uncertainty.

AI has more or less followed the "hype cycle" popularized by Gartner Inc.: Technologies perk along in the shadows for a few years, then burst on the scene in a blaze of hype. Then they fall into disrepute when they fail to deliver on extravagant promises, until they eventually rise to a level of solid accomplishment and acceptance.

AI has its roots in the late 1950s but came to prominence in the "expert systems" of the 1980s. In those systems, experts — chess champions, for example — were interviewed, and their rules of logic were hard-coded in software: If Condition A occurs, then do X. But if Condition B occurs, then do Y. While they worked reasonably well for specialized tasks such as playing chess, they were "fragile," says Eric Horvitz, an AI

ILLUSTRATION © FOTOLIA / ANDREA DANTI



Stair, the Stanford Artificial Intelligence Robot, features a new generation of AI software that integrates learning, vision, planning, reasoning, speech and more.

researcher at Microsoft Research.

"They focused on capturing chunks of human knowledge, and then the idea was to assemble those chunks into reasoning systems that would have the expertise of people," Horvitz says. But they couldn't "scale," or adapt, to conditions that had not explicitly been anticipated by programmers.

Today, AI systems can perform useful work in "a very large and complex world," Horvitz says. "Because these small [software] agents don't have a complete representation of the world, they are uncertain about their actions. So they learn to understand the probabilities of various things happening, they learn the preferences [of users] and costs of outcomes and, perhaps most important, they becoming self-aware."

These abilities derive from something called machine learning, which is at the heart of many modern AI applications. In essence, a programmer starts with a crude model of the problem he's trying to solve but builds in the ability for the software to adapt and improve with experience. Speech recognition software gets better as it learns the nuances of your voice, for example, and over time Amazon.com more accurately predicts your preferences as you shop online.

IT'S ALL ABOUT THE DATA

Carlos Guestrin

Machine learning is enabled by clever algorithms, of course, but what has driven it to prominence in recent years is the availability of huge amounts of data, both from the Internet and, more recently, from a proliferation of physical sensors. Carlos Guestrin, an assistant professor of computer science and machine learning at Carnegie Mellon University, combines sensors, machine learning and optimization to make sense of large amounts of complex data.

For example, he says, scientists at the University of California, Los Angeles, put sensors on robotic boats to detect and analyze destructive algae blooms in waterways. AI algorithms learned to predict the location and growth of the algae. Similarly, researchers at Carnegie Mellon put sensors in a local water-distribution system to detect and predict the spread of contaminants. In both cases, machine learning enabled better predictions over time, while optimization algorithms identified the best sites for the expensive sensors.

Guestrin is also working on a system that can search a huge number of blogs and identify those few that should be read by a given user every day based on that user's browsing history and preferences. He says it may sound completely different from the task of predicting the spread of contaminants via sensors, but it's not. "Contaminants spreading through the water distribution system are basically like stories spreading through the Web," he says. "We are able to use the same kind of modeling ideas and algorithms to solve both problems."

Guestrin says the importance of AI-enabled tools like the blog filter may take on importance far beyond their ability to save us a few minutes a day. "We are making decisions about our lives — who we to elect, and what issues we find important — based on very limited information. We don't have time to make the kind of analyses that we need to make informed decisions. As the amount of information increases, our ability to make good decisions may actually decrease. Machine learning and AI can help."

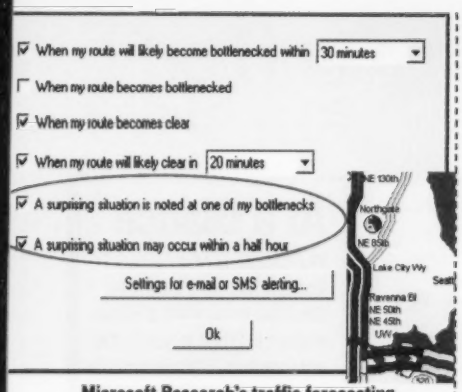
Microsoft Research has combined sensors, machine learning and analysis of human behavior in a road traffic prediction model. Predicting traffic bottlenecks would seem to be an obvious and not very difficult application of sensors and computer forecasting. But MSR realized that most drivers hardly need to be warned that the interstate heading

On the Street

Among the villains in the current financial debacle are the Wall Street "quants" – the computer scientists and mathematicians who wrote AI models for trading optimization and risk analysis. But Michael Wellman, a professor of computer science and engineering at the University of Michigan, says it's too early to say if any of the models failed to prevent the meltdown or even contributed to it.

"I think automation of trading and risk analysis is part of the solution, not part of the problem," says Wellman, who specializes in AI applications in markets. "For example, a big problem is a lack of transparency – companies not even understanding the assets they have. You'd hope that if the [investment] contracts were more machine-readable and -analyzable, companies would do much better risk analyses and would better understand what their positions are."

– GARY ANTHES


When my route will likely become bottlenecked within 30 minutes
When my route becomes bottlenecked
When my route becomes clear
When my route will likely clear in 20 minutes
A surprising situation is noted at one of my bottlenecks
A surprising situation may occur within a half hour
Settings for e-mail or SMS alerting...
Ok
NE 130th
Northgate
NE 85th
Lake City Wy
Ravenna Bl
NE 50th
NE 45th
UW

Microsoft Research's traffic forecasting system takes information captured by sensors and combines that with what it has learned from past traffic patterns to predict surprise backups 30 minutes in advance.

out of town will be jammed at 5 p.m. on Monday. What they really need to know is where and when anomalies, or "surprises," are occurring and, perhaps more important, where they *will* occur.

So MSR built a "surprise forecasting" model that learns from traffic history to predict surprises 30 minutes in advance based on actual traffic flows captured by sensors. In tests, it has been able to predict about 50% of the surprises on roads in the Seattle area, and it is in use now by several thousand drivers who receive alerts on their Windows Mobile devices.

Few organizations need to make sense of as much data as search engine companies do. For example, if a user searches Google for "toy car" and then clicks on a Wal-Mart ad that appears at the top of the results, what's that worth to Wal-Mart, and how much should Google charge for that click? The answers lie in an AI specialty that employs "digital trading agents," which companies like Wal-Mart and Google use in automated online auctions.

Michael Wellman, a University of Michigan professor and an expert in these markets, explains: "There are millions of keywords, and one advertiser may be interested in hundreds or thousands of them. They have to monitor the prices of the keywords and decide how to allocate their budget,

Michael Wellman

and it's too hard for Google or Yahoo to figure out what a certain keyword is worth. They let the market decide that through an auction process."

When the "toy car" query is submitted, in a fraction of a second Google looks up which advertisers are interested in those keywords, then looks at their bids and decides whose ads to display and where to put them on the page.

"The problem I'm especially interested in," Wellman says, "is how should an advertiser decide which keywords to bid on, how much to bid and how to learn over time — based on how effective their ads are — how much competition there is for each keyword."

The best of these models also incorporate mechanisms for predicting prices in the face of uncertainty, he says. Clearly, none of the parties can hope to optimize the financial result from each transaction, but they can improve their returns over time by applying machine learning to real-time pricing and bidding.

BRAINY STUDIES

One might expect AI research to start with studies of how the human brain works. But most AI advances have come from computer science, not biology or cognitive science. These fields have sometimes shared ideas, but their collaboration has been at best a "loose coupling," says Tom Mitchell, a computer scientist and head of the Machine Learning Department at Carnegie Mellon University. "Most of the progress in AI has come from good engineering ideas, not because we see how the brain does it and then mimic that."

Tom Mitchell

But now that's changing, he says. "Suddenly, we have ways of observing what the brain is really doing, via brain imaging methods like functional MRI. It's a way to look into the brain while you are thinking and see, once a second, a movie of your brain's activity with a resolution of 1mm."

So, cognitive science and computer science are now poised to share ideas as they never could before, he says. For example, certain AI algorithms send a robot a little reward signal when it does the right thing and a penalty signal when it makes a mistake. Over time, these have a cumulative effect, and the robot learns and improves. Mitchell says researchers have found with functional MRIs that regions of the brain behave exactly as predicted by these "reinforcement learning" algorithms. "AI is actually helping us develop models for understanding what might be happening in our brains," he says.

Mitchell and his colleagues have been examining the neural activity revealed by brain imaging to decipher how the brain represents knowledge. To train their computer model, they presented human subjects with a list of 60 nouns — such as *telephone, house, tomato* and *arm* — and observed the brain images that each produced. Then, using a trillion-word text database from Google, they determined the verbs that tend to appear with the 60 base words — *ring* with *telephone*, for example — and they weighted those words according to the frequency of both occurring.

The resulting model was able to accurately predict the brain image that would result from a word for which no image had ever before been observed. Oversimplifying, the model would, for example, predict that the noun *airplane* would produce a brain image more like that for *train* than for *tomato*.

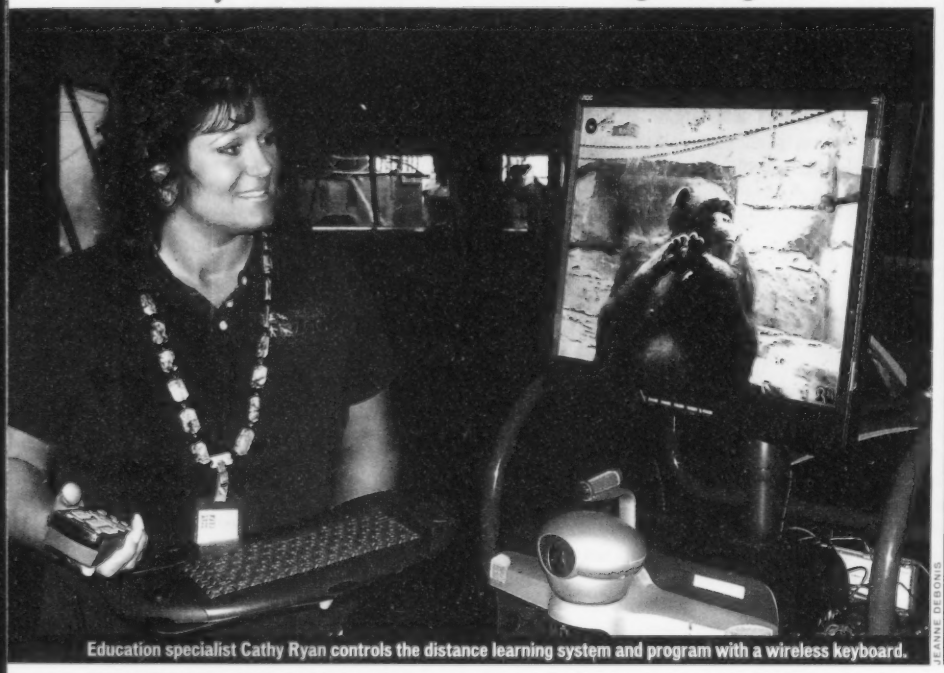
"We were interested in how the brain represents ideas," Mitchell says, "and this experiment could shed light on a question AI has had a lot of trouble with: What is a good, general-purpose representation of knowledge?" There may be other lessons as well. Noting that the brain is also capable of forgetting, he asks, "Is that a feature or a bug?"

Andrew Ng, an assistant professor of computer science at Stanford University, led the development of the multitalented Stair. He says the robot is evidence that many previously separate fields within AI are now mature enough to be integrated "to fulfill the grand AI dream."

And just what is that dream? "Early on, there were famous predictions that within a relatively short time computers would be as intelligent as people," he says. "We still hope that some time in the future computers will be as intelligent as we are, but it's not a problem we'll solve in 10 years. It may take over 100 years." ■

Habitat FOR Learning

With videoconferencing, educators at a city zoo can teach about animals directly from their habitats. By Mary K. Pratt



Education specialist Cathy Ryan controls the distance learning system and program with a wireless keyboard.

JEANNE DEBONIS

At a Glance

The Cleveland Metroparks Zoo is a 168-acre facility in Ohio that attracted 1.2 million visitors in 2007. It has 3,000 animals from 600 species.

■ **Project leaders:** Conservation education curator Vicki Searles, Zoo Director Steve Taylor, Cleveland Zoological Society Executive Director Liz Fowler, Cleveland Metroparks Commissioner William J. Ryan and Cleveland Metroparks Director Vern Hartenburg.

■ **IT head count:** The Cleveland Metroparks IT department has five full-time employees, including manager Frank Budziak, and one part-time worker. Budziak has been the point man for the zoo's wireless mesh technology, with another worker as backup.

■ **Return on investment:** Zoo officials say they can't assign a dollar value to the benefits of deploying the wireless mesh technology to enable mobile videoconferencing for its distance learning program. "The return is offering experiences that kids can't get otherwise," Searles says.

TAD SCHOFFNER has some new on-the-job partners that he knows will upstage him. Schoffner can blame his employer, which deployed the mobile and wireless technology that now puts him side by side with some real animals.

Schoffner, assistant animal care manager at Cleveland Metroparks Zoo, uses the zoo's new mobile and wireless infrastructure to teach students about animals within their habitats via videoconference link.

"You can't always guarantee [the animals] are going to do what you want, but when it works, it works great," says Schoffner. "Even if the timing isn't just right, it's still a lot better than standing in a studio."

Computerworld named the zoo's project as the winner in the Media, Arts & Entertainment category in its annual Honors Program.

Cleveland Metroparks Zoo has broadcast educational programs to students through its distance learning program since 1998, using standard videoconferencing equipment housed in its Adventure Hall studio. The classroom had interest-

The Business Case for Wireless

FRANK BUDZIAK, the IT manager at Cleveland Metroparks, sees wireless technology as enabling more than just education.

He says he might be able to open up the wireless infrastructure at Cleveland Metroparks Zoo so that employees who work on the grounds can be more efficient. For example, if a manager needed to direct a worker to the rainforest exhibit to fix a compressor, the manager could send the order to the worker's handheld and receive status reports.

And there would be even more possibilities if wireless systems were used in conjunction with voice over IP, because employees' phones could work just about anywhere, says Budziak. Such a setup could eliminate the need for separate land-line and cell phone numbers, so the zoo wouldn't have to use call-forwarding systems.

Budziak says the organization's wireless infrastructure isn't able to support such visions – yet – but it could do so soon. He's not the only one who believes in the business potential of wireless technologies.

"We're seeing serious uptake of wireless within enterprises because the organizations see real benefits from having this network," says Sally Cohen, an analyst at Forrester Research Inc.

Early-adopter companies in shipping, logistics, health care, manufacturing and retail have found that wireless communications systems offer an efficient, speedy and cost-effective way to transmit voice and data between workers in the field and central locations, says Gartner analyst Michael King.

Other industries are now considering wireless networks, he says. Companies can benefit from being able to reach employees more easily while allowing them to have more mobility. For example, businesses will find that it's easier and cheaper to use wireless networks to connect telecommuters to corporate systems when they visit the office than it is to set up permanent wired connections that they only use once in a while.

Although companies could calculate real savings from that type of use, they won't be able to assign specific returns on investment from many of the softer benefits that wireless yields, Cohen and King say. How, for example, can you calculate ROI for a workforce that's happier because it can meet outdoors without losing connectivity?

Such scenarios are still far from widespread, though.

"The all-wireless office is in its nascency right now. It's only in the past six months that we have said, 'This is something we can think about, that you can think about operating all your offices like this, because it will work and because it's going to be cheaper,' " King says.

Gartner has predicted that by 2011, 70% of new network ports – voice or data – will be wireless.

But challenges remain. King says hills, trees and buildings and other structures can weaken Wi-Fi signals in outdoor deployments, and walls can weaken signals indoors. There are also challenges regarding bandwidth capacity, because heavily trafficked areas with large numbers of users can experience slower speeds.

WiMax, on the other hand, allows for the broadcast of a more robust signal and a wider deployment, King says. Most IT vendors aren't yet shipping WiMax-enabled devices, but that hasn't necessarily slowed interest in WiMax.

Budziak says he's looking at WiMax to determine whether it can deliver even more coverage for Cleveland Metroparks Zoo at competitive prices.

"It's not mature enough to provide the coverage we need here," he says, "but it's a technology I have my eye on."

– MARY K. PRATT

ing teaching tools — a big world map, animal skulls, a model of a Komodo dragon — but it wasn't designed to accommodate visits from the zoo's larger residents. Presenters teaching about primates, for instance, had to rely on video, photos and PowerPoint presentations to relay their lessons. The educational staff wanted to create a more interactive experience that more closely resembled a trip to the zoo. To do that, they implemented an enterprisewide wireless infrastructure and made the videoconferencing equipment mobile.

"I taught in a room with four walls. The kids were going from one classroom into another. I wanted them to see more," says Cathy Ryan, an education specialist in the zoo's conservation education division. "Now we have a lot more teachable moments. We can say, 'Take a look at that joey — it's pushing its head out of the pouch,' and we can zoom in on that for the kids to see."

THE COST HURDLE

From the start, zoo leaders wanted to broadcast from the exhibits, says conservation education curator Vicki Searles, "but the technology wasn't readily available for the price we could afford."

Fast-forward to 2005. Zoo officials, seeing other Cleveland-area institutions and organizations adopt wireless tools, recognized their own chance to go wireless. To help zero in on a plan, zoo officials hired Total Systems Integration Inc. (TSI), a Galion, Ohio-based company that had helped the zoo set up its videoconferencing equipment.

TSI suggested a wireless mobile videoconferencing cart. "There aren't too many [organizations that] do videoconferencing over a wireless network, so this is pretty unique," says Bob Lynch, TSI's sales and marketing director.

The mobile cart has teleconferencing equipment from PolyCom Inc., a hospital-quality battery power supply, a Bluetooth-enabled wireless keyboard and a wireless client to connect with the network. The cart even has special wheels to handle rugged ground and a cover to protect against the elements.

The wireless videoconferencing cart was only part of what the zoo needed, though. It still required the infrastructure to transmit from that cart out on the grounds to classrooms signed up for the programs.

The zoo's initial idea was to run copper and fiber lines, Lynch says. But implementing a standard hub-and-spoke design would require land lines from each wireless access point back to the switch — a costly proposition for the hilly, tree-covered 168-acre zoo.

Instead, the zoo settled on a newer technology, Cisco Systems Inc.'s Aironet 1510 outdoor mesh access points, which would extend real-

Tad Schoffner, assistant manager of animal care, prepares to teach a program about primates to schoolchildren in Texas.

VICKI SEARLES

time videoconferencing out onto the grounds without the need for additional cabling or line-of-sight access. This made it not only easier to deploy but cheaper, too. (Lynch estimates savings of tens of thousands of dollars.)

"The beauty of wireless mesh is it uses radio frequency to connect back to the wired network so you can extend the network to areas that are difficult for cable," Lynch explains.

He points to other advantages, saying that this wireless data network is a self-healing, self-configuring system, so the zoo doesn't need a radio frequency specialist to manage it.

"It's scalable, so if they want to expand to different areas in the zoo, they just have to add access points," Lynch adds.

In 2005, the zoo received a $250,000 grant from the U.S. Department of Education to cover the $100,000 price tag of its wireless infrastructure and the mobile teleconferencing equipment, Searles says. The grant also covered the cost of developing programming at the zoo.

"The Cleveland Metroparks Zoo distance learning program is an outstanding example of how school systems and community organizations can work together to achieve critical education levels," says Rep. Ralph Regula (R-Ohio), who helped secure the federal grant.

Lynch says TSI did a site survey to figure out where to put the access points for wireless coverage. Still, with the zoo's challenging topography, TSI workers had to fine-tune the system afterward, aiming and repositioning access points to maximize coverage areas.

Even today, there are limits to the coverage, Ryan says.

"It can't go everywhere, but we're working to that point, connecting all the dots," she says, noting that the zoo has more dead spots in the summer, when leafy trees block access. And Ryan says high winds can knock out power on some of the equipment.

On the other hand, the infrastructure takes little in terms of maintenance, says Frank Budziak, IT manager for Cleveland Metroparks, a state organization that includes the zoo. Access points occasionally need to be repositioned, and there's normal wear and tear — but that's it.

A WIRELESS WAVE

The zoo is among a growing number of institutions, particularly ones that have campus settings, that are benefitting from wireless infrastructure, says Gartner Inc. analyst Michael King.

The epoxy for the modern IT executive.

"Increasingly, we're finding that college campuses, zoos and other public places are enhancing either students' learning experiences or connectivity by utilizing any number of wireless technologies," King says. He notes that some organizations use wireless to offer self-guided audio tours to visitors, although he hasn't seen other zoos adopt wireless videoconferencing capabilities like the Cleveland zoo has.

The zoo now has 19 access points, enabling presenters to deliver programs from the seven most popular attractions, including the primate, shark and rainforest exhibits.

Some educational programs are still broadcast from Adventure Hall, but Ryan says there's no question that adding the wireless infrastructure has delivered significant returns.

The zoo saw a 25% increase in the number of classrooms scheduled to receive programming after the wireless implementation. From Jan. 1 through Aug. 31, 2008, the zoo's programming reached 171 schools (with 4,500 students) throughout Ohio and in other states, including Alabama, Texas, New York and Pennsylvania.

However, because the programs are free, the increase doesn't translate into a financial ROI.

But zoo leaders aren't calculating returns in terms of money. The biggest benefit, Searles says, is bringing live, real-time action to children who are eager to learn. Students can interact with presenters as they interact with the animals — and that's something that couldn't happen even from Adventure Hall, where presenters had to use videotaped segments.

"When the kids know they're actually seeing something live, it makes a big difference," Searles says.

For example, Schoffner has taught classes that focus on how different animals use tools. He says students learn more when he can point to a chimp in the background who picks up a branch and strips off the leaves to make it into a digging tool.

"They can see the animal right there, they see it moving. It just brings the learning to life. Now they really want to learn. It's just so exciting," says Dessie Sanders, principal of the Michael R. White School, a K-8 school in Cleveland.

Such feedback gives officials even more incentive to expand the zoo's wireless infrastructure, Searles says.

Already, they're installing more access points, starting with the wolf and koala exhibits. And they're looking at whether they can transfer their success with wireless and mobile technologies to other areas besides distance learning.

For instance, they're looking at how they can use the infrastructure to bring new programs to visitors via their handhelds or cell phones.

Searles says she sees more possibilities in the future. She envisions a time when students will have control over the cameras at the zoo so they can zoom in or pan around to see the action that interests them the most.

"What we'd like to do," she says, "is be able to have access from every part of the zoo." ■

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.*

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■ Q&A | MARK E. VAN BUREN AND TODD SAFFERSTONE

Collective Quick Wins

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For new leaders, fast results count. But real success depends on how they achieve them.

The breakneck pace of today's business environment makes quick wins critical. But for 40% of new leaders, striving for such wins leads to failure. In this month's Harvard Business Review, **Mark E. Van Buren** *and* **Todd Safferstone,** *practice manager and managing director, respectively, of the Corporate Executive Board, look at how the pursuit of quick wins affected the successes and failures of 5,400 new leaders. They talked with Kathleen Melymuka about their findings.*

"Do you sense a little irony there? They step into the leadership role and forget that they need to lead."
TODD SAFFERSTONE

Your research shows that the most successful new leaders secured quick wins. Why are quick wins so important? **Van Buren:** The payoff is things like improved performance, but beyond that, there are significant business ramifications of *not* getting off to a quick start. In this economic environment, there is a really strong imperative on leaders moving into new positions to demonstrate that they are able to get the business to where it needs to be in a really short period of time.

We think this is especially critical for IT leaders, because many of them are in positions where they will be working on projects with a long payback, and it's important for them to establish credibility with business leaders as quickly as possible. That quick win can buy them the luxury of time for the more difficult challenges.

You also found that 40% of transitioning leaders fell short. What was the most common mistake they made? **Van Buren:** We were surprised at the commonality of challenges people encountered, no matter their roles. It didn't matter whether they were coming into a senior position or their very first management role, nor did their function or industry [matter]. Almost universally, we saw the one mistake that seems most pernicious is having an excessive focus on details. It's important for managers to know the ins and outs of the projects they may be managing, but if it becomes excessive, they lose sight of the bigger picture of what's going on in the organization, and they lose the ability to prioritize. The urgent often outweighs the important. This is often true of IT leaders; heavy emphasis on details can be their greatest weakness. Given the highly detail-oriented nature of IT work, it's very hard not to be constantly supervising.

The second most common pitfall was reacting negatively to criticism. Why would a previously stellar employee – who just got a promotion, after all – do that? Safferstone: Two dynamics are at play here. People can become intoxicated by their own success. We call it the "nothing to learn" trap. The fact of your promotion proves you're ready and insulates you from criticism. You are anointed and validated by your selection. The second dynamic is that you are insecure and uncertain, and therefore out to prove yourself. You fall into the same trap, but because of your uncertainty. You want the appearance of confidence. This is particularly dangerous for people with no previous experience in management, and especially for those stepping in from tech roles.

The third trap was intimidating others, and the fourth was jumping to conclusions. I seem to detect a pattern of hubris, or fear that looks like hubris. Safferstone: Yes. Intimidating others and jumping to conclusions are very related. It's important to remember the very real need for speed that people feel, and they're effectively unwilling to delegate their success or failure to people they don't necessarily know or trust. It can fall into a vicious cycle: To the degree you're unwilling to trust your team, they don't trust you, and it's more difficult to build leadership to drive the team forward.

Jumping to conclusions is related to the need for speed. They push off to the side any analysis, thoughtfulness or even engagement with the team, because there is just no time for that. They need to prove that their selection proves that they have all the answers.

Finally, many of those who failed were guilty of micromanaging – similar to the first trap. What's going on here? Safferstone: That traces back to the new manager's unwillingness to delegate his or her future to the team. The feeling is that it's not just a task or a project to delegate; it's ultimately their career. So instead, they do it all on their own, and the team is [put on] the sidelines. They become obsessed with owning their success and everything related to it. In IT leaders, all of that is exacerbated because they're moving to increasing management responsibility and away from their core areas of expertise. They feel the need to go back and make decisions at every level because they used to be the guy who made those decisions.

4 Steps to Collective Quick Wins

- **Make people believers, not bystanders. Get them engaged with skin in the game.**
- **Understand uncertainty. Your people are transitioning too. Let them know it's a team effort.**
- **Show humility. Demonstrate respect for team members and a willingness to learn by seeking their advice.**
- **Get to know your team. As you lead people, learn their strengths, weaknesses and motivations.**

– ADAPTED FROM *HARVARD BUSINESS REVIEW*

Given all these potential missteps, you say the real goal should be "collective quick wins." How does that differ from plain-old quick wins? Van Buren: That's the most exciting insight that came out of this research. Quick wins were essential. People had to be results-oriented. The need for speed and to demonstrate results was very real and critical. But we found, unfortunately, that too often, people pursued results in a way that led to individual success at the expense of the people they worked with. They left in their wake a trail of people who were disengaged, no longer feeling a part of the work, not motivated and not making meaningful contributions to priorities critical to that leader.

Mark E. Van Buren

The best leaders recognized that the success they would have would come as a result not of their own expertise but their ability to lean on others in pursuit of that quick win. So to the extent you get others to share expertise, you're able to get much stronger sustainable success because everyone is engaged in that. And you're also coming out in a better position because you have the support and engagement of the team going forward. True leadership is leading a team into the future, and you have to enlist the team in that process. It's not just getting results; it's working with others and building talent.

Safferstone: Do you sense a little irony there? They step into the leadership role and forget that they need to lead. It feels easier to get it done on their own. But the first accomplishment needs to be a leadership accomplishment.

You write that collective quick wins is really about change management. This should be good news to IT people, since change management is their life. Van Buren: The type of leadership demonstrated in a collective quick win came down to critical skills in managing change. The best leaders recognized that what they were experiencing in the transition, everyone was experiencing, and they had capabilities to help everyone through the change. We often don't think of a leadership transition as a change like a reorganization or a merger. But the best leaders recognize that they can apply the same skills and discipline to manage their own transitions as they would to manage a change — with milestones, goals, the need to incorporate all the actors and ensure that each is playing a proper role in the process.

In IT, this is an especially critical advantage because of experience they have in change management. IT people recognize the challenges that any rollout requires, so it's an opportunity to export their expertise in systems change — from managing change in a project to managing your own change as a leader.

So the idea is to score a win but also to build something more lasting? Safferstone: If you're able to score a collective quick win, you have not only achieved the value of the win itself, but far more valuable is what you win along the way: You learn about the team's strengths, weaknesses, aspirations, motivations, dynamics. You've built a platform for future success in a way that achieving an individual quick win would never provide you. ■

Exploring Disaster Recovery Options

There's no budget for **DR for new projects,** but our manager **isn't giving up** without looking into the **alternatives.**

Trouble Ticket

AT ISSUE: New software implementations in 2009 won't have dedicated servers at the backup site.

ACTION PLAN: At least three low-cost options can be investigated.

NOW THAT my disaster recovery budget for 2009 has been wiped out, I'm trying to find some kind of replacement that won't cost any money upfront. I can't in good conscience sit idly by while we roll out critical services without the safety net of DR — that's like watching a friend drive without a seat belt. Maybe there's a very good chance that nothing bad will happen, but if something does go wrong, the consequences can be so severe that the overall risk is beyond acceptance.

Our existing applications already have cold standby systems set up in our alternate data center, so I'm focusing on systems that will be deployed this year. (Heaven forbid if someone gets the bright idea of repurposing any existing DR servers. I'm afraid it will sound like a no-brainer for saving money; I certainly won't be bringing it up to anyone.)

I found a great article on *Computerworld*'s Web site ("How to Build Realistic Disaster Recovery Options") on overcoming budget objections to get buy-in for DR. It emphasizes setting realistic expectations and educating upper management. Good advice, but my managers still decided that this isn't the time to spend money on DR, even though they claim to understand its value.

So, I'm looking for low-cost alternatives. So far, I've thought of using development and test systems as fallbacks, leveraging virtual server products to take snapshots of production systems that can later be installed on virtual servers in the event of an incident, and turning to cloud computing.

Using development and test systems for recovery would essentially be free. It's a time-honored approach, but it comes with challenges. We'd have to move those systems to our off-site data center, which could lead to hassles for our developers. In addition, our nonproduction hardware usually has much less capacity than our production systems and can't be expected to perform well under a full load. And because the test hardware is often different from our production hardware, we'd have difficulties during the restore process. My experience has been that such recoveries usually fail. But the option might still be better than nothing.

■ I can't in good conscience sit idly by while we roll out critical services without the safety net of DR.

Virtual machines are a potentially more reliable alternative. Regular snapshots of production servers would give us high confidence that we could re-create them in a virtual environment. I'm not sure this is going to be easy to do with nonvirtualized systems, though.

Most of our servers run on dedicated hardware, so we would need to put them through a migration to a virtual environment and keep those images safe in our alternate data center. And, of course, we would need to have hardware available at our DR site to be able to install our virtual machines, and we don't have that today. And we don't have the money to buy any hardware enclosures. While this may not be a perfect solution, we may be able to design around some of these challenges.

Cloud (or grid) computing, which seems to be emerging as a realistic choice for on-demand computing capacity, is the third possibility. The idea of being able to bring up a complete virtual data center when needed, simply by purchasing compute time, sounds like a cost-effective alternative for DR. Hey, why pay for an expensive computing infrastructure that you don't need until you do need it? Of course, that's harder than it sounds, and it's also potentially insecure. A lot of analysis is being done on the security of cloud and grid environments, with the outcome looking a bit — well, cloudy. But I have to wonder how important the security considerations are, since we would be doing this only if a serious disaster were in progress. I'll need to take a closer look before I decide. ■

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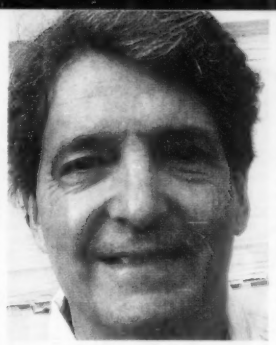
To join in the discussions about security, go to **computerworld.com/blogs/security.**

This week's journal is written by a real security manager, ***"J.F. Rice,"*** *whose name and employer have been disguised for obvious reasons. Contact him at jf.rice@engineer.com.*

■ OPINION

Preston Gralla

The Last Big Bang?



AS I WRITE THIS, Microsoft is expected to release the long-awaited Beta 1 of Windows 7. Those who try it out should savor it. It may be the last "big bang" OS from Microsoft, with future Windows versions delivered as a series of lightweight, changeable, modular components rather than as entirely new operating systems.

Why the change? With broadband approaching ubiquity and Web-based applications growing dramatically, there's no longer a need for big, do-it-all operating systems that demand fast CPUs and powerful graphics processors. If you run your applications primarily via the Web, there's no need for all of the overhead that operating systems like Windows Vista require.

Windows 7 will be a big-bang operating system, but it nods to Windows' future. Microsoft consciously made it capable of being run on less demanding hardware than Windows Vista. It will be able to run on inexpensive, lightweight, RAM-light and processor-light netbooks. Moreover, Microsoft has stripped out important components, including Windows Mail, Windows Photo Gallery, Windows Movie Maker and a variety of other applets. They'll be available via download at Windows Live.

It's easy to imagine a future in which the core of Windows is very slim so it can run on a variety of networked devices. So, for example, the base configuration of Windows might be able to run cloud-based applications, such as an online version of Microsoft Office or Windows Live Mail — or Google Docs and Gmail, for that matter. Those with netbooks might use only this core.

Enterprises that use internally developed Web-based applications might opt for the core plus additional components that let users run their standard applications. These apps could be run on inexpensive desktop PCs, which would be little more than terminals with hard disks and some processing power.

Consumers, on the other hand, might want a far more fully featured operating system with a graphics subsystem capable of running games, 3-D simulations and more. They would get the base operating system plus additional, heavier components.

■ A Google operating system would be Microsoft's worst nightmare. And Microsoft will have to confront that possibility.

Windows would become a constantly evolving operating system, with new components continually released. Users would not have to wait several years for new features to be added when the next big-bang operating system comes along. They could upgrade as soon as a new component became available.

Microsoft would not just sell the core of the operating system, but it would also charge for each component — a very solid business model, particularly if Microsoft were to sell subscriptions so that all new components were automatically installed.

Will Microsoft actually go in this direction? Signs indicate that it might. Its Windows Live lineup of downloadable applications is reaching critical mass and may well be the model for how the company distributes Windows components in the future. It has also announced that it will release online versions of Microsoft Office, possibly including free, ad-supported versions. So in essence, it's already doing to Microsoft Office what it might do to Windows itself.

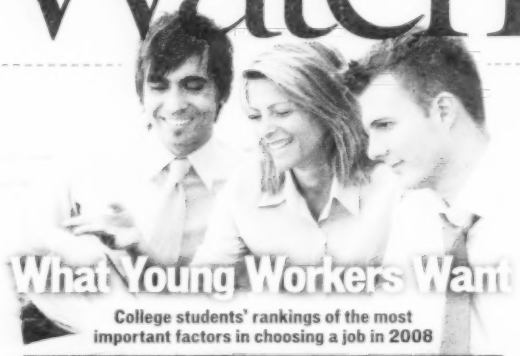
For several years, there's been talk within Microsoft about "MinWin," a small, stripped-down kernel of Windows that might form the core of future operating systems. There have also been rumors that Google is working on a Google operating system, built using its Android operating system for mobile phones and Google Gears, which is used to allow Web-based applications such as Google Docs to work offline.

A Google OS would be Microsoft's worst nightmare. And Microsoft will have to do something to confront that possibility.

What does all this add up to? A modular future for Windows, where you pay a small fee for the base operating system, then additional fees for components, with some components available for free. So go ahead and try Windows 7 when it comes out. It may well be the last operating system of its kind. ■

Preston Gralla *is a contributing editor for* Computerworld.com *and the author of more than 35 books, including* How the Internet Works *(Que, 2006).*

Career Watch



What Young Workers Want

College students' rankings of the most important factors in choosing a job in 2008

JOB/EMPLOYER ATTRIBUTES	RANKING
Opportunity for advancement	9.74
Good insurance package	9.20
Friendly co-workers	8.93
Company location	8.90
Opportunity for personal development	8.88
High starting salary	8.85
Recognition for good performance	8.54
Opportunity for self-expression and creativity	7.69
Clearly defined assignments	7.47
Casual atmosphere (noncompetitive environment)	7.25
Company embraces diversity	7.15
Company takes an active role in the community	6.77
Signing bonus	6.21
Company is a recognized name	6.18

BASE: SURVEY OF 19,000 COLLEGE STUDENTS, 2008
SOURCE: NATIONAL ASSOCIATION OF COLLEGES AND EMPLOYERS

DOES YOUR OPINION COUNT?

44%

Percentage of U.S. companies that don't conduct employee surveys. Of those that do, 46% fail to make any changes as a result of the employee feedback. Employee surveys are most likely to be conducted by companies in the South (57%), and action on the employee feedback is most common in the West (58%).

SOURCE: OPINION RESEARCH CORP. SURVEY OF 1,437 COMPANIES, JUNE 2008

PAGE COMPILED BY JAMIE ECKLE

ASK AN IT LEADER

Kumud Kalia

The CIO at Direct Energy answers questions about the economy, online schools, ethics and more.

With the economy in deep trouble, what can you say to encourage me to stick with IT as a profession? At 26, I'm thinking about returning to school and studying accounting, but it's technology that I really love. Better knowledge of finance is good for IT professionals who want to make significant contributions to business success, especially if you aspire to be an IT manager. So studying accounting doesn't have to mean leaving the technology field, but you do have to think about what it is you love about technology and how you want to contribute. Tech professionals are always in demand, even in recessions, but you may have to relocate to find suitable opportunities. If that is not attractive or possible, then spending time at school to improve your marketability to companies could also be a productive use of your time. But don't let your tech skills get too rusty!

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QUESTION?
If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com**, and watch for this column each month.

What's the one skill that could best help an IT pro weather this economic downturn? Adaptability! Be prepared to change your role and either use new skills or reuse old ones. Companies will be restructuring and asking people to do different things. Keep an open mind and an enthusiastic attitude, and employers will be grateful to have you around. And whatever happens, make sure you stay current – keep your certifications up to date and keep reading tech sites, participating in online tech forums, etc., even if it's on your own time.

I'm looking into getting a master's degree. Are online schools gaining respect in the eyes of hiring managers? Do it because you want to, not because of what hiring managers will think. There are many ways to gather knowledge, and hiring managers are impressed with people who have and can apply knowledge; they're less impressed by academic degrees. Experience with current technologies is always more valuable, so certifications in technologies from companies like Microsoft, Oracle and Cisco might be more relevant in this economy than a broader academic education, which may be personally enriching but less commercially valuable.

I found out that a co-worker has been accessing some employees' HR files. I'm pretty sure he had no legitimate reason to do so, and I don't think anyone else knows about it. What should I do about this? I feel funny about ratting someone out, but I wouldn't want someone poking around in my files. Many companies have established whistle-blower policies to allow confidential and often anonymous reporting in situations such as this. I suggest you seek out your company's policy through its intranet or published policy statements. If those don't exist, you can use anonymous e-mail sites or have someone else make a phone call for you to tip people off in your HR or legal/compliance departments, and they can initiate the appropriate investigation.

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Shark Tank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Spoilsport!

Flash back to the early days of the Web, when this big software company wants to beef up its issue tracking so that techs can view trouble tickets specific to a particular building or hallway, according to a pilot fish there. Initial estimate from the consultants: $15.8 million and nine months to build the application. "While they were determining the cost, I built a simple Web page that used an HTTP refresh to update the data every five minutes and scraped the database using a generic Internet database connector," says fish. "The users could then set the desired filter for their location via dropdown menu or in the code. I posted it to our central IT Web site and demo'd it to the IT director. Total cost, including a week of my time: less than $2,000. Each hall got a shiny new monitor connected to the Web page. I got a promotion. The consulting team got a lot of free time."

Um, No He Won't

It's a full-blown production crisis in this IT shop, where a customer-facing application has ground to a halt. "We had a conference bridge open with the systems admins, database admins, SAN technicians, network admins, several managers and the application's lead developer," says a pilot fish who's in on the call. "My teammate, a sysadmin, opened up a tool to look at I/O performance. The I/O was so bad that on a scale of 1 to 100, the performance graph showed a straight line across the top. My teammate did the sensible thing and changed the scale of the graph to show 1 to 1,000 – at which point the lead developer, looking on via NetMeeting, went into conniptions: 'You can't just increase the scale by 10! You'll be driving 10 times the data through that connection!' "

Why IT Loves HR

This pilot fish has worked his way through college at a supermarket chain, but with his new IT degree, he applies for a job at an insurance company. "One Friday afternoon at the supermarket, the personnel department at the insurance company called and asked me if I could start Monday," says fish. "I explained that I had given my word to the supermarket that I would give two weeks' notice. They said if not Monday, the offer would be withdrawn. Fast-forward two weeks: Personnel calls again. Same scenario, Monday or else. I kind of liked the supermarket job anyway. Fast-forward another two weeks. Personnel called again. This time, they asked if I could give two weeks' notice and start two weeks from Monday. We agreed, and two weeks later I went to work. First words from my new boss: 'I don't know what took so long. We really could have used you a month ago.' "

■ *Sharky could use your true tale of IT life right now. Send it to sharky@computerworld.com, and you'll score a sharp Shark shirt if I use it.*

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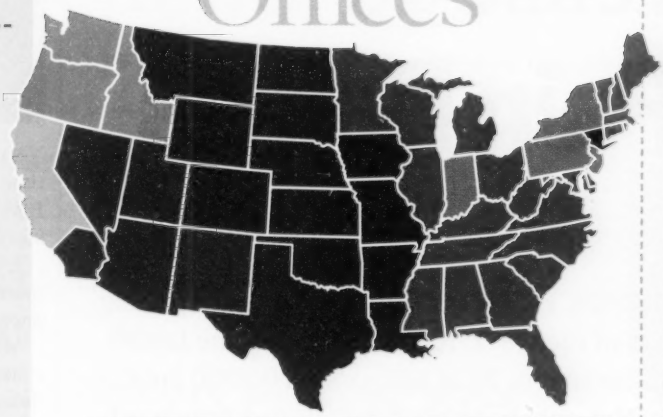

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Frank Hayes

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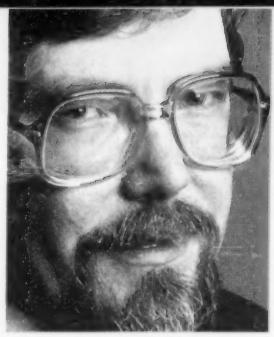

MICROSOFT CUTS 5,000 JOBS. That's the big news of the week. Not just because the layoffs will cut one in 20 of Microsoft's 96,000 employees. Not only because it signals just how hard Microsoft has been hurt by the failure of Vista and by shifts in the way big customers license and use software. Not even because of what it represents for the rest of the IT industry.

It's big because it means Microsoft has begun to hit bottom.

And it's about time. For the past couple of decades, we've been referring to Microsoft as the new IBM. But Microsoft has never learned the lessons of the original IBM — not even the ones that Microsoft forced Big Blue to learn.

Consider: Back in early 1993, IBM had never had a round of layoffs, not even the kind of nips and tucks that Microsoft has used to trim about 1,000 employees over the past few years. When you worked at IBM, unless you fouled up badly, you had a job for life.

That all changed 16 years ago, when IBM's mainframe-centric business model failed — largely because of computing shifts to PCs and servers running Microsoft software. IBM's culture was sluggish, and it buried innovation. Result: The company's profits were headed off a cliff.

It took a new chairman and CEO, Lou Gerstner, to take the company apart and reassemble it around IT services. Along the way, there were layoffs — a *lot* of layoffs. Many, many good people were hurt. So was IBM's reputation in towns like Poughkeepsie, where so many mainframe plant workers ended up on the street.

Today, IBM is healthy again. And the IT industry is healthier for not being dominated by Big Blue's mainframes.

It's easy to understand why Microsoft hasn't learned that lesson from IBM. This is Microsoft, after all. It has a lock on its markets. It has customers over a barrel. It's the 800-pound gorilla of the IT world, and it has been for as long as anyone at the company can remember.

■ It's easy to understand why Microsoft hasn't learned the lesson from IBM. This is Microsoft, after all.

Of course, all those things were true of the old IBM, too.

But Microsoft's situation is nowhere near as bad as IBM's was in 1993, is it? After all, Microsoft's profits haven't crashed — they've just dropped 11%, and that's in the middle of a recession.

Microsoft's revenue is still rising — though a closer look shows that it's inching up at less than the rate of inflation.

And Microsoft's stock? Last Thursday, as Microsoft was announcing the layoffs, one cable-TV reporter commented that MSFT has "gone nowhere for years." Actually, the stock has lost nearly half its value over the past year.

So now, for the first time, Microsoft — like IBM 16 years ago — is resorting to a major layoff.

It won't be enough, any more than a layoff was enough for IBM.

Microsoft has been coasting for years on Windows and Office. Those are the cash cows that have enabled the company to fumble its way through years of halfhearted "innovation" and watered-down imitation. Microsoft has lost ground (or never gained a footing) in search versus Google, music players versus Apple, Web browsers versus Firefox.

Worse still, Microsoft has forgotten how to improve even those cash-cow products. Office 2007 is a mess for usability. Vista is a disaster in almost every way.

And now, Microsoft has begun to hit bottom financially, too. It's not all the way down yet. There's a lot more pain to come — both in Redmond and across the IT business.

But that has to happen before Microsoft can change its leadership, its culture, its business and, ultimately, its value to customers.

Now *that* will be big news. ■

Frank Hayes *is Computerworld's senior news columnist. Contact him at frank_hayes@computerworld.com.*

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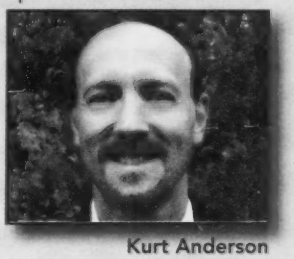

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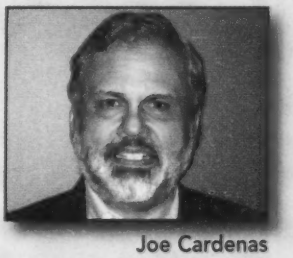

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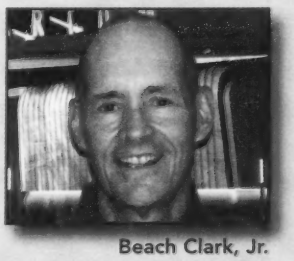

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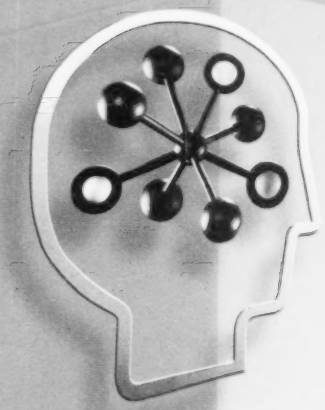
ALTERNATIVE THINKING ABOUT SYSTEM POTENTIAL:

See eye to eye with your budget—without limiting your vision.

Compromising is fine. For other people. But now you can watch your bottom line, while still getting a look into the future. The HP portfolio of solutions erases the gap between cost and innovation, while delivering reliable ProLiant technology, all at prices that require a second look. So, while others try to think outside the box—we're rethinking what goes on inside it.

Technology for better business outcomes.

intel Xeon inside™
Powerful. Efficient.



HP BladeSystem c3000 Enclosure
$3,959 (Save $1,863)

Lease for just $110/mo.
Smart Buy [PN: 481658-001]

- Supports up to 8 server blade devices in a 6U enclosure
- 3-year limited warranty

HP ProLiant BL260c Server
$899 (Save $631)

Lease for just $22/mo.
Smart Buy [PN: 480965-B21]

- Powered by the Intel® Xeon® Processor
- 2GB memory
- 1-year limited warranty

HP ProLiant DL120 G5 Server
$849 (Save $339)

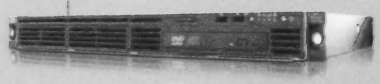
Lease for just $21/mo.
Smart Buy [PN: 470064-763]

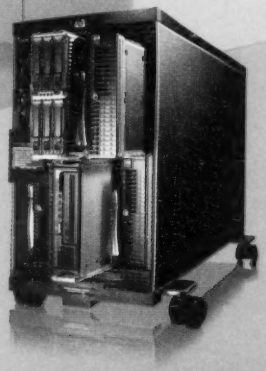
- Powered by the Intel® Core™ 2 Duo Processor
- One 250GB SATA hard drive
- 2GB memory
- 1-year limited warranty

HP StorageWorks DAT160 USB Tape Drive
$729 (Save $80)

Lease for just $18/mo.
Smart Buy [PN: Q1580SB]

- One-Button Disaster Recovery feature easily restores lost files, applications
- Store up to 160GB on a single cartridge, while backing up to 50GB/hr.





See additional HP models which feature small form factor, high-performance SAS hard drives.

To learn more, call 1-866-625-0809 or visit hp.com/servers/rethink7

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